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Find the *Astronics / Ballard Technology USB 429* at our website: ***Click HERE***

ASTRONICS
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USB 429

USB Avionics Interfaces for ARINC 429 and 717



The USB 429 family of pocket-sized USB adapters enable computers to communicate with, simulate, test, and monitor ARINC 429 and 717 equipment and systems. These rugged USB 2.0 peripherals feature extensive 429/717 functionality and are compatible with virtually all modern PC laptop, desktop, and tablet computers.

Portable Avionics Interfaces

These versatile interfaces are suitable for a wide range of applications in the lab and in the field. They support maximum data throughput on all ARINC channels and have a large 32 MB built-in memory. All power necessary for operation is provided via the single USB port. Plug and Play and Hot Swap features make them easy to install and move between computers.

Fully-Featured Design

Models are available with either ARINC 429, ARINC 717, or a combination of both. All include eight avionics level input/output discretes and IRIG time synchronization/generation. They also provide useful non-standard functionality, such as a range of data rates, use of parity as data, and error injection. Once configured, the USB hardware performs all the protocol processing. It manages the reception, transmission, error checking, time-tagging and buffering of messages—freeing user software to focus on high-level application-specific processing.

Easy-to-Use Software

Users can develop their own software applications with the included BTIDriver API. With only a few function calls, a program can operate the USB hardware and process messages to and from the avionics databuses. Functions include routines for transmitting, receiving, scheduling, recording, time-tagging, and manipulating data. With BTIDriver, application code migrates seamlessly to and from other Ballard devices, reducing development time and costs.

Ballard's optional CoPilot software provides easy-to-use, interactive tools for ARINC 429 and 717 test, analysis, and simulation. CoPilot simplifies project development and provides added productivity through virtual instrument displays, flexible monitoring and analysis tools, and a powerful scripting engine. Get special bundled pricing when ordered with the interface hardware.

KEY FEATURES

- Small, portable, and rugged
- Easy Plug and Play installation
- High channel counts:
  - Up to 16 ARINC 429 Channels
  - Up to 4 ARINC 717 Channels
  - 8 Avionics Discrete I/O
- IRIG A/B PWM and AM
- Full ARINC 429 functionality
  - Mix of receive and transmit channels
  - Handles periodic and transfer protocols
  - Message filters and schedules
  - Standard and non-standard bit rates
  - Error detection and selective injection
  - Variety of syncs and triggers
  - Several message buffering schemes
  - ARINC 575 support
- FCC, CE and RoHS Compliant
- 3-year limited warranty standard

ARINC 429 Features

General

Numeric and file transfer protocols
Standard and custom bit rates
- 12.5 and 100 kb/s standard
- Configurable per channel
- Wide range of custom bit rates

Set parity per channel (odd/even/data)
Sync output on all or selected messages
Internal self-test bus

Message Data

Buffering schemes facilitate data handling:
- Guaranteed data integrity
- Current value buffers (default)
- Circular lists transmit a repeated pattern
- FIFO list buffers for sequential data
- Asynchronous list buffers

Message record contains the ARINC word, time-tag, channel, speed, error data, min/max elapsed time, hit counter, and/or gap time

Receivers

Automatic bit rate detection
Receive message filtering (Label/SDI)
Current value and list buffers
Error detection: gap, timing, length, parity
Log and/or interrupt on errors

Transmitters

Single, scheduled, and asynchronous messages
Tag messages for error injection, sync out, and logging/interrupts
Error injection: parity, inter-message gap
Externally trigger all or selected messages

Transmit Schedules

Schedules: automatic or explicit
Automatic based on repetition rates
Contain messages (labels), gaps, and controls for pausing, halting, pulsing discrete outputs, and event logging
Modes: Continuous or single step for debugging

Other Features

Standard Features

- USB 2.0 interface
- 8 avionics discrete I/O
- IRIG A/B input and output
- 2 LED indicators
- 32 MB on-board memory

Sequential Monitor

A time-tagged record of selected activity on ARINC 429, 717, and discrete I/O
Filter 429 data by channel/label/SDI
Includes ARINC data, channel, speed, errors, and time-tag
Efficient DMA monitor pipe to host

ARINC 717

Software selectable biphase/bipolar
Subframe and superframe support
Data rates: 64 to 8192 words/second

Avionics Discrete I/O

8 programmable inputs/outputs
Can be used as syncs and triggers
Output: Open/Gnd, 35 VDC, 200 mA (max), self monitoring, inductive load protected
Log transitions to sequential record

Time-tag/IRIG

48-bit hardware time-tag (1µs resolution)
IRIG A or B, AM (input), PWM, and PPS
- Generate or synchronize
- Synchronize hardware time-tags

Specifications

Component temp: -40 to +85 deg C
Storage temp: -55 to +100 deg C
I/O Connector: HD44F D-Sub
Dimensions: 3.0 x 4.45 x 0.97 in (76 x 113 x 25 mm)
Weight: under 5 oz (140 g)
Power: Single USB port (325 mA max)
MTBF: 1,200,000 hours

Interrupts/Logging

Poll or use interrupts
Configurable event log
Programmable event logging/interrupts from messages, tx schedules, and buffers

Software

Universal BTIDriver API for C/C++, C#, VB, VB.Net, and LabVIEW™
Windows®, Linux® and Solaris OS drivers
Translation DLLs for older Ballard devices
Williamsburg protocol library
CoPilot analysis & test software (opt)

Ordering Information

Hardware & CoPilot*	Hardware Only	ARINC 429	ARINC 717
CP-UA1440	UA1440	12R4T	–
CP-UA1430	UA1430	8R4T	–
CP-UA1420	UA1420	4R2T	–
CP-UA1410	UA1410	1R1T	–
CP-UA1431	UA1431	8R4T	2R2T
CP-UA1401	UA1401	–	2R2T

**Includes CoPilot analysis & test software*
nRnT = number of Receive/Transmit channels
Products (except /NE versions) include 5 ft USB cable with screw-locks, Mating HD44P D-Sub I/O connector, manuals, and software CD

Options

To order, add the appropriate suffix to the above part number. Example: UA1431/NE

/FTO	Flight Test Orange case (black case is standard)
/NE	No Enclosure, Printed Circuit Board Assembly only, for embedded use
/FXY	Conformal coating (Parylene)

CONTACT INFO

Astronics Ballard Technology
11400 Airport Road
Everett, WA 98204 USA
+1.425.339.0281
Ballard.Sales@astronics.com
astronics.com/BallardTechnology

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